



Non-adherence and its impact on treatment efficacy

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Disclosures for: Alfonso Iorio

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RESEARCH SUPPORT	Biogen Idec (Bayer, Baxter, NovoNordisk, Pfizer - No conflicts)
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HONORARIA	Bayer, Baxter, Biogen Idec, CSL, NovoNordisk, Octapharma, Pfizer – No conflicts
ADVISORY COMMITTEE	Bayer, Baxter, Biogen Idec, CSL, NovoNordisk, Octapharma, Pfizer – No conflicts
CONSULTANT	Bayer, NovoNordisk – No conflicts

* European Accreditation Council for Continuing Medical Education

From “theory” to “practice”

- Effectiveness = Efficacy * Prescription * Adherence

- Effectiveness = 0.9 * 1 * 1 = 0.9

- Effectiveness = 0.9 * 0.5 * 0.5 = 0.225

- Effectiveness = 0.9 * 0 * any = 0



Improving adherence

- It is a matter of changing people behavior
- It is not a medical intervention
 - The medical component is before (efficacy) and after (effectiveness)
- It is a behavioral intervention
 - It requires a “behavioral theory” aware approach



A cognitive theory approach...

- **Methods**

- Social learning theory
- Health belief model
- Trans-theoretical model



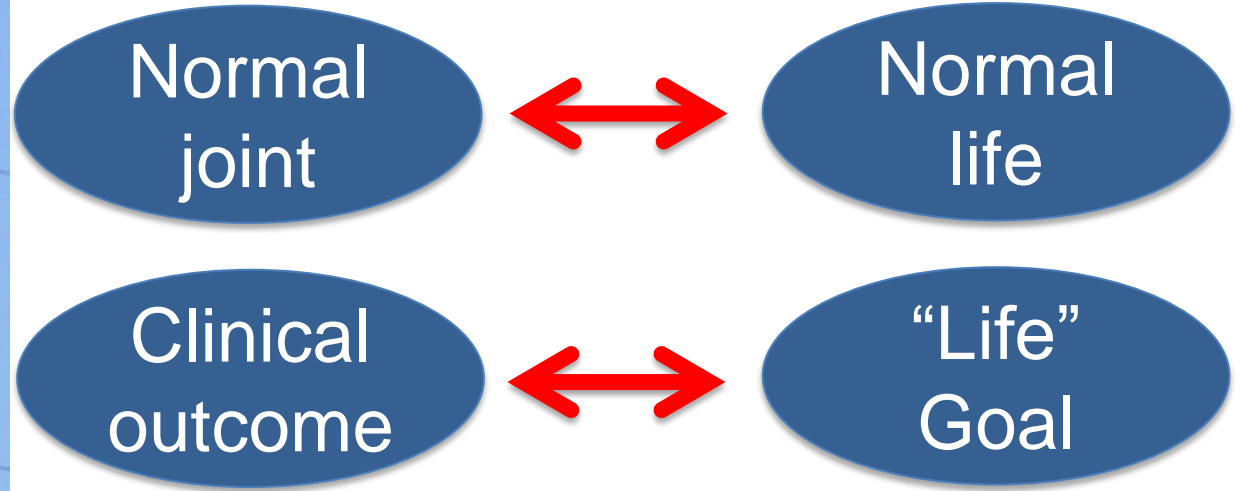
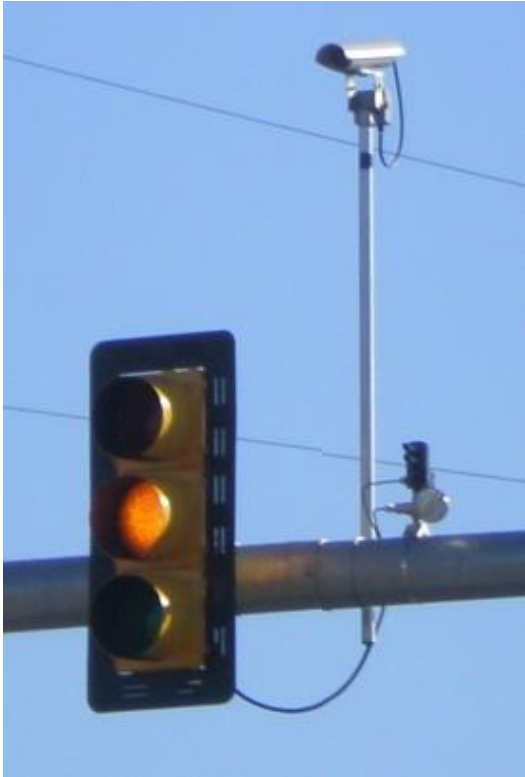
- **Approach**

- The effect(s) of any treatment and/or intervention(s) to improve adherence should ideally be measured on
 - process outcome
 - clinical outcomes

(1) Bandura, A. New York: General Learning Press, 1977. Rosenstock, IM. Health Education Quarterly, 1988;15:175-183.
(2) Prochaska, JO. J Consult Clinical Psychol, 2000;51:390-395. Prochaska, JM. Adm Policy Ment Health, 2001;28:247-61.(3) Rosenstock IM. Milbank Mem Fund Q, 1966;44:94-127. Becker, GS. J Polit Econ, 1974, 82:1063-93



Framing the problem of adherence



Evaluating adherence

- Adherence is a process outcome, *not necessarily* a patient relevant outcome
- Canadian Hemophilia Prophylaxis Study:
 - ¼ of children has normal joints 10 years after 1 infusion/week
 - Hypothetical comparison against a classical regimen:

	Classical	“self-selected CHIPS”
• Adherence:	100%	30%
• Joint health:	100%	100%



Adherence to prophylaxis in hemophilia

Study / Domain	Llewellyn 2003 UK	De Moerloose 2008 EU	Hacker 2001 US	Du Treil 2007 US	Geraghty 2006
Overall Score	++	+	-	---	---
Selection bias	+/-	+/-	+/-	--	-
Determinants	++	+	+	+	+/-
Information bias	+	+/-	-	+/-	-
Outcome	+	+	+	+	+/-
Valid results	++	++	+/-	+/-	+
Generalizability	+	+	-	-	+

Schrijvers et al. Haemophilia 2013

Determinants of adherence to prophylaxis

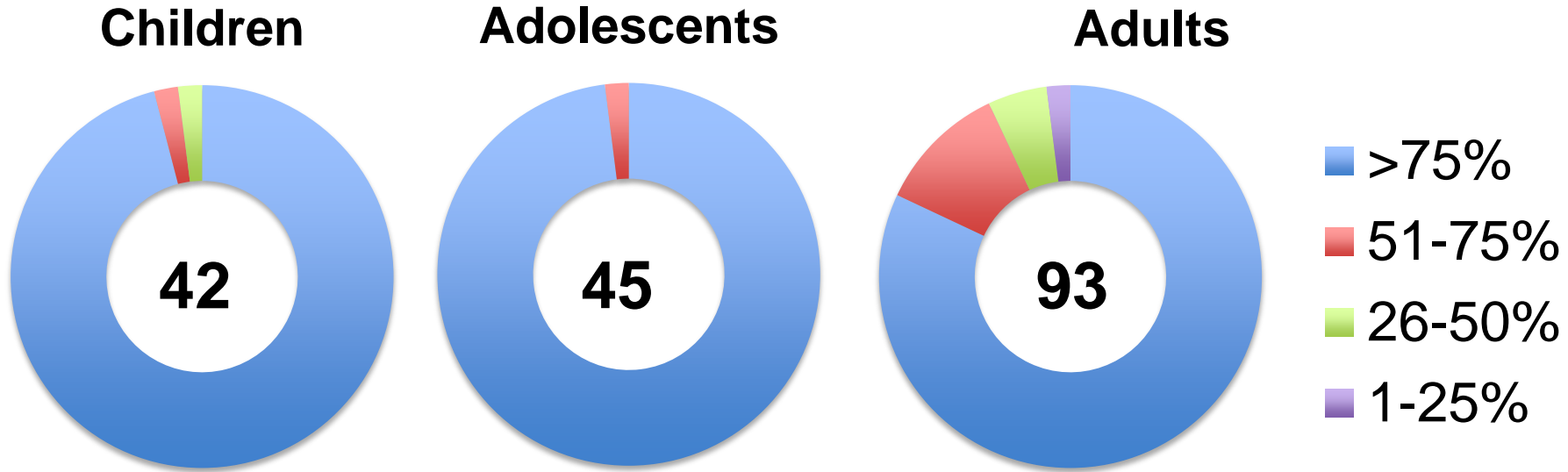
- Illness perception
 - Weak illness perceptions identity and consequences are associated with low adherence
- Treatment perceptions
 - Weak perception of need for treatment or stronger concerns regarding clotting factors are associated with low adherence
- Hemophilia Center “effect”
 - Quality of the relation with HC staff and time spent @ HTC are associated with higher adherence.

Llewelyn CD et al. Psychol Health 2003

De Moerloose P. et al Haemophilia 2008



Determinants of adherence to prophylaxis

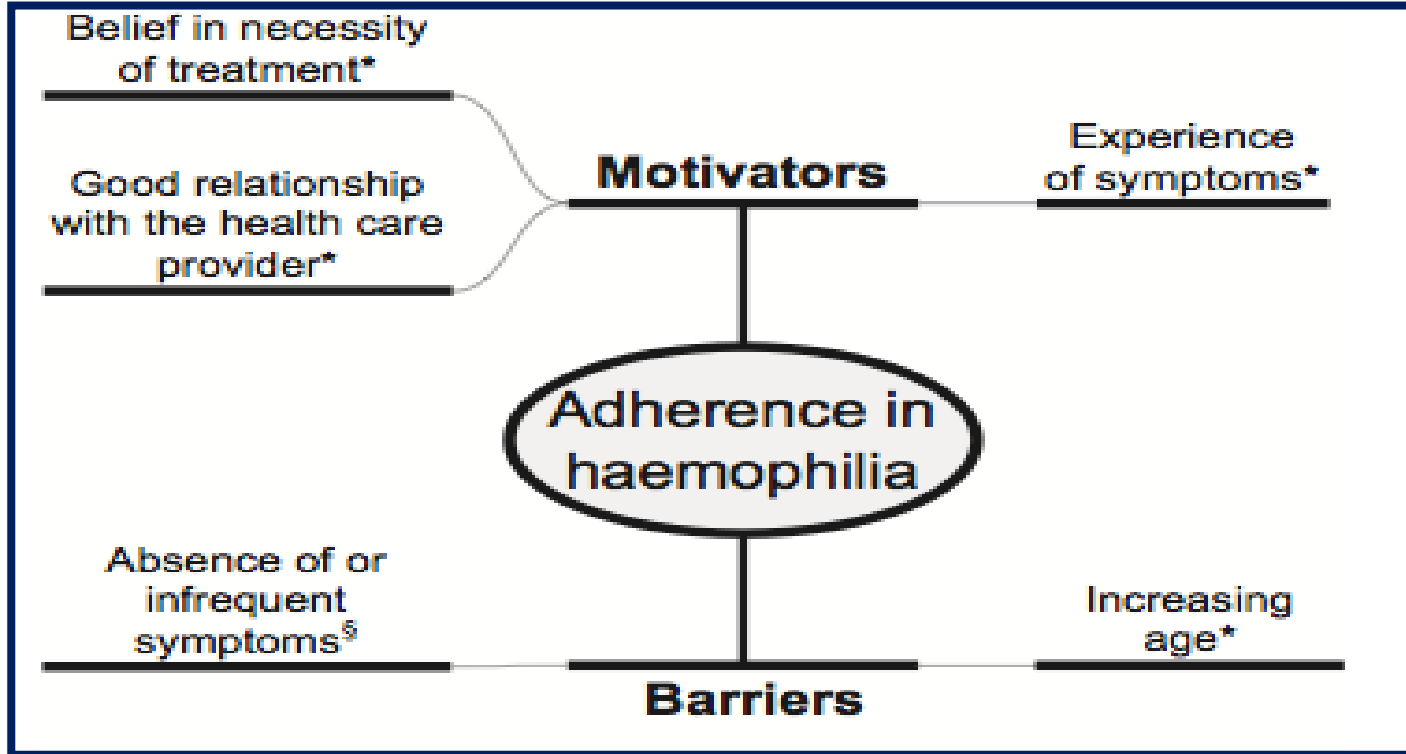


De Moerloose P. et al Haemophilia 2008

Instruments and their validation

- Ho, S et al. Hemophilia 2014;20(1), 39–43.
Visual analog scale
- Duncan, N et al. Hemophilia 2010; 16(2): 247–55.
VERITAS-Pro
- Duncan, N. et al. Hemophilia 2010; 16(1), 47–53.
VERITAS-PRN

A graphical open conclusion...





Thanks

hemophilia.mcmaster.ca